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Attorney Docket No. 318 P002

PATENT

#3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re U.S. Patent Application of:)
Douglas B. Buchanan)
Application No. 10/099,654)
For: PUTTER HEAD WITH PRE-MACHINED)
INSERT)
Filed: March 15, 2002)

TRANSMITTAL OF PRIORITY APPLICATION

Box PATENT APPLICATION
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Washington, D.C. 20231

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Transmitted herewith for filing are the following documents:
X Certified Copy of the GB Patent Application 0106364.3

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Respectfully submitted,

Date: May 1, 2002

By:

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I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation and Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein together with the Statement of inventorship and of right to grant of a Patent (Form 7/77), which was subsequently filed.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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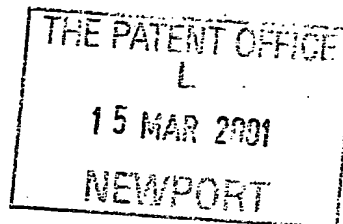
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1/77

Request for grant of a patent

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The Patent Office

Cardiff Road
Newport
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15 MAR 2001

1. Your reference

BPC/6/UK

2. Patent application number

(The Patent Office will fill in this part)

0106364.3

15MAR01 E613944-1 D03622
P01/7700 0.00-0106364.3

3. Full name, address and postcode of the or of each applicant (underline all surnames)

DOUGLAS BOYD BUCHANAN

Patents ADP number (if you know it)

8038093002

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

PUTTER HEAD WITH PRE-MACHINED INSERT

5. Name of your agent (if you have one)

Douglas Hussey

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

140 Sandylands Park
Wistaston, Crewe
Cheshire CW2 8HE

Patents ADP number (if you know it)

6294557001 IS

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number.

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

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XXX

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7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
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XXX

XXX

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
- See note (d))

NO

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Description	6
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Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents

(please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature

D. Hussey

Date 17/3/01

12. Name and daytime telephone number of person to contact in the United Kingdom

Douglas Hussey 01270 567586

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After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

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PUTTER HEAD WITH PRE-MACHINED INSERT

This invention relates to a head for a golf putter. More particularly the invention is concerned with producing a head for a putter in such a manner as to allow expensive machining techniques to be used to provide the face of the putter with markings designed to facilitate the control of a golf ball during the putting stroke. Preferably the markings are confined to the sweet spot on the putter face.

In US patent 5275409 (Currie - 1994) there is disclosed a putter having a vertical flat machined surface extending between top and bottom surfaces. The vertical flat machined surface forms the striking face of the putter. According to this patent the process of machining provides a technique in which a very flat surface can be provided upon a putter head. However this patent laments the fact that machined putter heads are not common and have not been widely adopted because the machining process is so expensive.

US patent 3206206 (Santosuosso - 1965) discloses a putter head having a rectangular insert fitted within the putter head. The insert is grooved for contacting the ball. However, this design likewise does not seem to have gained wide acceptance in the art possibly because of the complexities of machining the rectangular opening in the putter head and then machining the insert to fit within the opening.

In US patent 5637044 (Swash) a putter head is disclosed having concentric grooves with a common centre of rotation formed on the face of the putter. The grooves are described as being relatively shallow but even so have a depth typically of between 0.2 to 0.3mm. The grooves are said to impart advantageous spin to the ball.

1. The present invention relates to a method of determining the relative positions of two points in a three-dimensional space, and to an apparatus for carrying out such a method.

2. The method of the present invention is characterized in that it comprises the steps of: (a) determining the relative positions of two points in a two-dimensional space, and (b) determining the relative positions of the two points in a three-dimensional space.

3. The apparatus of the present invention is characterized in that it comprises: (a) a means for determining the relative positions of two points in a two-dimensional space, and (b) a means for determining the relative positions of the two points in a three-dimensional space.

4. The method of the present invention is characterized in that it comprises the steps of: (a) determining the relative positions of two points in a two-dimensional space, and (b) determining the relative positions of the two points in a three-dimensional space.

5. The apparatus of the present invention is characterized in that it comprises: (a) a means for determining the relative positions of two points in a two-dimensional space, and (b) a means for determining the relative positions of the two points in a three-dimensional space.

6. The method of the present invention is characterized in that it comprises the steps of: (a) determining the relative positions of two points in a two-dimensional space, and (b) determining the relative positions of the two points in a three-dimensional space.

7. The apparatus of the present invention is characterized in that it comprises: (a) a means for determining the relative positions of two points in a two-dimensional space, and (b) a means for determining the relative positions of the two points in a three-dimensional space.

8. The method of the present invention is characterized in that it comprises the steps of: (a) determining the relative positions of two points in a two-dimensional space, and (b) determining the relative positions of the two points in a three-dimensional space.

9. The apparatus of the present invention is characterized in that it comprises: (a) a means for determining the relative positions of two points in a two-dimensional space, and (b) a means for determining the relative positions of the two points in a three-dimensional space.

10. The method of the present invention is characterized in that it comprises the steps of: (a) determining the relative positions of two points in a two-dimensional space, and (b) determining the relative positions of the two points in a three-dimensional space.

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According to the present invention there is provided a head for a putter, the head including a striking face having markings formed on at least a part of the putter face, the markings being of micron size.

5 Preferably the markings are curvilinear and non-concentric and are formed by a machining process, for example, a milling process. A milling cutter, for example an end mill may be passed over the surface.

The invention will now be described by way of example only with reference to the accompanying drawings wherein:

10 Figure 1 shows a front perspective view of a putter head in accordance with one aspect of the invention.

Figure 2 shows a front perspective view of a putter head in accordance with a second aspect of the invention

Figure 3 shows a part sectional elevation of the putter head shown in figure 2.

15 Figure 4 is a perspective view of an insert for insertion into a putter head in accordance with the invention.

Figure 5 illustrates the curvilinear markings that may be formed upon the putter face in accordance with the invention.

20 Figure 6 illustrates a part cross-section of markings in accordance with the invention.

In figure 1 there is shown a putter head 2 in accordance with a first aspect of the invention. A shaft 3 is attached to putter head 2, for

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

1. The first step is to identify the problem. In this case, the problem is that the company is not meeting its sales targets.

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example by suitable adhesive. Putter head 2 includes curved side surfaces 4, 5 and a curved rear surface 6 and has a striking face 7.

Dotted lines 8 denote an area including the sweet spot on the putter face 7 and has curvilinear surface markings 9 formed thereon by the machining method described below.

In figure 2 there is shown a golf putter 10 in accordance with a second aspect of the present invention. Golf putter 10 comprises a T-shaped head 11 connected to a shaft 12 by means of a hosel member 13. Hosel member 13 may be hollow as best seen in figure 3. A shaft connection may comprise the hosel member 13 or the hosel member 13 may be dispensed with and the shaft connection may comprise shaft 14 connected directly to head 11. A reinforcing ring 13A may be used to assist in connecting shaft 14 to hosel member 13. The head 11 comprises an outer shell member 15, best seen in figure 3 which defines a closed cavity 16 within head 11. A shoulder 17 is formed within the cavity 16. The putter head 11 includes a striking face 18. An important part of the present invention is the use of an elongate cylindrical inner insert member 19 set into or located within cavity 16 in the head 11. As seen in figure 4 inner insert member 19 has a front face 20 and a rear face 21 and a circular peripheral surface 22 joining the front and rear surfaces 20, 21. Peripheral surface 22 has two semi-circular grooves 23, 24 formed thereon for a purpose later to be explained. An aperture 25 is formed in insert 19 by drilling and reaming to receive and ensure a proper fit for either hosel 13 or shaft 14. As best seen in figure 3 hosel member 13 stops short of the end of the aperture 25 so that it does not contact the outer shell member 15. It is believed this arrangement enhances the transmission of impact energy to the putter shaft as "feel". A sweet spot 26 for the putter head 11 as indicated by the crossed lines 27 is arranged to be at the centre of area of the front face 20 of insert 19. Insert 19 is supported and fixed within cavity 16 by means of Neoprene

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resilient O-rings 28, 29 (see Figure 3) fitted to the semi-circular grooves 23, 24 in the insert 19. A small clearance is left between the shoulder 17 in the cavity 16 and the rear face 21 of insert 19. Also as best seen in Figure 3 the O-rings 28, 29 space the insert 19 from the outer shell member 15 so that a small clearance 30 is formed between the periphery 22 of insert 19 and the outer shell member 15. Thus this in a sense insulates the insert member from the outer shell member so that impact energy is channelled directly through the insert member 19 to hosel 13 and hence up shaft 14 to be felt as "feel" in the golfer's hands. The rear surface 21 defines a blind bore or cavity 31 which together with the remainder of cavity 16 forms a void 32 within the head 11. This is thought to increase the resonance factor of the head thereby contributing to the "feel" of the putter. Stabilising or inertia weights 33 are let into the sides 34 of head 11 to minimise the effect of off-centre hits. A slot 35, see figure 2, assists in aiming the striking face 18 of the putter. In addition to resiliently fixing insert 19 within cavity 16 the O-rings act as seals to prevent dirt and moisture from entering through clearance 30 and acting on either side of the shaft connection 13 within cavity 25 they also protect this assembly. Shaft connection 13 enters aperture 25 in insert 19 through a drilled hole 36 in outer shell member 15.

The arrangement whereby insert 19 is located within cavity 16 by means of the resilient O-rings 28, 29 and thereby forms a part of striking face 18 provides a number of important advantages. For example, it means that the round peripheral surface 22 of insert 19 need not be made to tight tolerances, indeed it need not be machined at all with the result that insert 19 may be made from bar stock. Likewise since the rear surface 21 stops short of shoulder 17 within cavity 16 this need not be made to tight tolerances. Indeed since the rear surface 21 is hidden from view within the cavity 16 the end of the insert 19 need not be machined at all and may have an as-cut finish or as-cast finish as the

case may be. Any discrepancies in fit can be taken up by the resilience of the O-rings. This means that it is the front surface 20 only forming the sweet spot that needs to be subjected to the expense of a machining procedure. Also the fact that the insert 19 can be pre-machined out with cavity 16 and prior to installation therein means that the machining procedure can be considerably simplified.

Figure 5 shown greatly exaggerated for ease of explanation illustrates the characteristics of the surface markings formed on the sweet spot 26 on insert 19. As shown these are non-concentric curvilinear grooves having the cross-section shown in Figure 6 with a pitch (P) of 0.7mm.. The grooves or markings illustrated in Figure 6 are of Micron size (1 micron = 1 thousandth of 1mm). As used herein the term "micron size" is meant to convey the meaning of a depth (D) of markings or grooves several orders smaller than the smallest groove (0.2mm) disclosed in the above mentioned US patent 5637044 (Swash). That is a depth (D) of 0.05mm (50 microns) to 0.1mm for the present invention compared to depth of 0.2mm in the Swash patent. In a practical embodiment of the present invention with an insert diameter of 25.4mm a tungsten carbide end mill of 6.2mm diameter was passed once over the front surface of the insert. End mills having a diameter of between 2.5 and 7.6mm could be used in the practise of the invention. The curvilinear non-concentric markings produced by the end milling are of constant radius and present the same configuration to the golf ball as it moves relative to the putter face during a putting stroke. This is in contrast to the aforementioned Swash patent where the grooves radiating from a common centre point will result in presenting differing configurations to the golf ball. Also grooves or markings of this small order of depth could possibly allow face slippage if the putt is at an angle from the desired path of travel but the lightly curved lines will have a slightly self centralising effect.

The insert member 19 is made from a material selected to be a soft ductile material, for example bronze, which will facilitate the transmission of shock thereby conveying impact energy as "feel" to the golfer's hands. Outer shell member 15 and hosel member 13 are made of aircraft quality high strength aluminium (specification - 6082T6 (H30)). The putter head of the present invention may be used with any conventional shaft but it can be most advantageously used in a putter with a substantially large diameter (between 25 and 45mm), thin walled (between 0.75 and 1mm), parallel shaft or a grip made therefrom to enhance the "feel" thereof. When such large sized shaft or grip is used the preferred material is carbon fibre.

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CLAIMS

1. A head for a putter, the head including a striking face having markings formed on a part of the striking face, the markings being of micron size.
2. A head for a putter according to claim 1 wherein the markings have a depth of 50 microns (0.05mm)
3. A head for a putter according to claim 2 wherein the markings are Y shaped grooves having a pitch of 0.7mm.
4. A head for a putter according to claim 1 wherein the markings are curvilinear and non-concentric.
5. A head for a putter according to claim 1 wherein the markings are formed on an insert located within a closed cavity formed within the head.
6. A head for a putter according to claim 5 wherein the insert is spaced from the head by means of a clearance space.
7. A head for a putter according to claim 6 wherein the insert is made from bar stock material.
8. A head for a putter according to claim 6 wherein the insert is made from as cast material.
9. A head for a putter according to claim 7 or claim 8 wherein the insert has a front face, the front face only being machined from either the bar stock or as cast material.
10. A head for a putter according to claim 1 wherein the markings are produced by means of a milling process.

1. The first part of the application is the title page, which contains the title of the invention, the name of the inventor, and the name of the assignor.

2. The second part of the application is the specification, which contains a detailed description of the invention and its operation.

3. The third part of the application is the claims, which define the scope of the invention and the rights sought by the applicant.

4. The fourth part of the application is the abstract, which is a brief summary of the invention and its operation.

5. The fifth part of the application is the drawings, which are used to illustrate the invention and its operation.

6. The sixth part of the application is the oath, which is a statement by the inventor or assignor that the invention is new and original.

7. The seventh part of the application is the fee, which is a payment made to the United States Patent and Trademark Office (USPTO) to cover the cost of processing the application.

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11. A head for a putter according to claim 10 wherein the milling process uses an end mill.

12. A head for a putter according to claim 5 wherein the insert defines the sweet spot of the putter.

5 13. A head for a putter substantially as herein described with reference to any one of Figures 1 to 6 of the accompanying drawings.

14. An insert for a putter head, the insert having markings formed on a face thereof, the markings being of micron size.

10 15. An insert for a putter head according to claim 14 wherein the markings have a depth of 50 microns (0.05mm)

16. An insert for a putter head according to claim 14 wherein the markings are curvilinear and non-concentric.

17. An insert for a putter head substantially as herein described with reference to Figure 4 of the accompanying drawings.

Page 1

has been the first time in the history of the United States that a President has been impeached. The House of Representatives has voted to impeach President Richard M. Nixon for alleged involvement in the Watergate scandal. The Senate will now decide whether to remove him from office. This is a historic moment in American history. The President's defense team has argued that he was not involved in the scandal and that he was a victim of a conspiracy. The House has rejected this defense and has voted to impeach the President. The Senate will now decide whether to remove him from office. This is a historic moment in American history.

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ABSTRACT

5 The invention provides a head for a putter. The face of the putter head includes very shallow markings having a depth of the order of 50 microns (0.05mm). The markings are formed on an insert defining the sweet spot of the putter face by an end milling process with the insert being resiliently supported and fixed within a cavity in the head by means of resilient O-rings. Since the resilient O-rings take up any clearance the insert does not need to be made to tight tolerance and can be machined out with the head prior to insertion within the head cavity. The markings produced are radial and non-concentric grooves.



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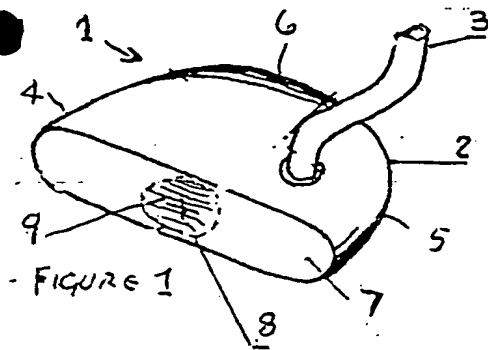


FIGURE 1

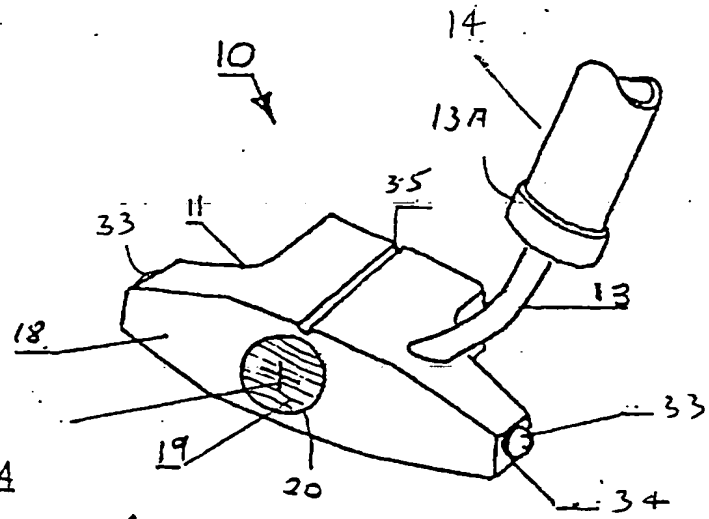


FIGURE 2

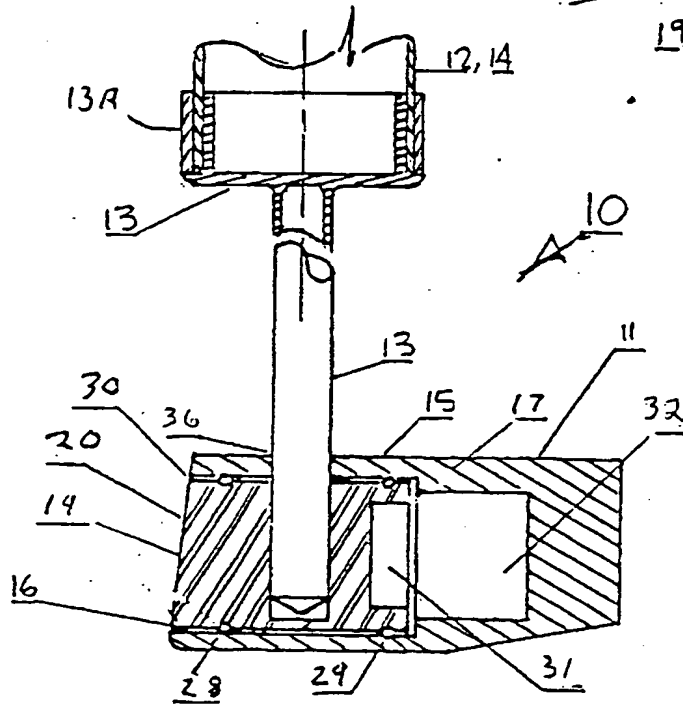


FIGURE 3

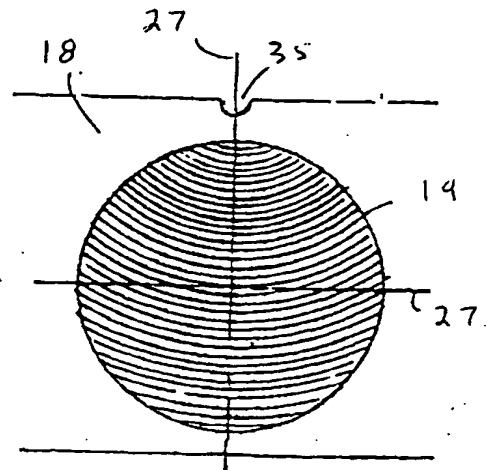


FIGURE 5

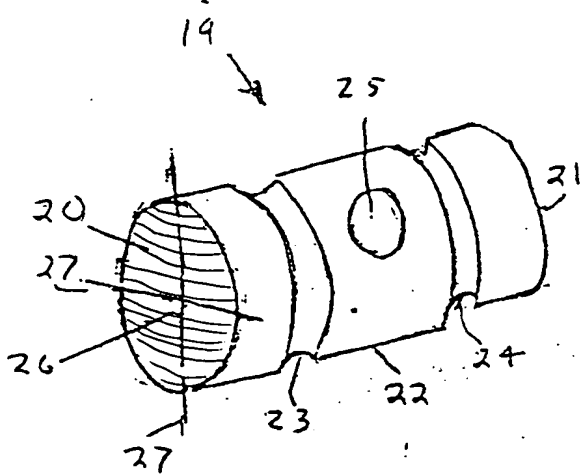


FIGURE 4

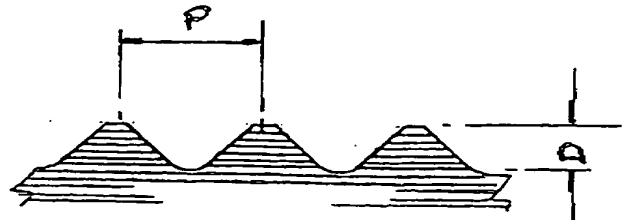


FIGURE 6

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